IN THE CLAIMS

The pending claims are presented here for reference. No amendments are proposed at this time.

1.-20. (Cancelled)

21. (Previously Presented) A method of inhibiting methylation of DNA comprising

contacting a DCMTase with a synthetic inhibitor molecule so as to form an enzyme/synthetic inhibitor molecule complex in the presence of the DNA,

wherein the synthetic inhibitor molecule comprises a C-5 methylcytosine which recognizes and binds an allosteric site on DCMTase, thereby inhibiting DNA methyltransferase activity.

22. (Previously Presented) A method of inhibiting proliferation of cancer cells comprising

administering to a subject a synthetic inhibitor molecule that comprises a C-5 methylcytosine which recognizes and binds an allosteric site on DCMTase thereby resulting in an enzyme/synthetic inhibitor molecule complex,

the presence of the complex inhibiting DCMTase-mediated methylation of DNA, thereby inhibiting proliferation of the cancer cells.

23. (Previously Presented) The method of claim 22, wherein the cancer cell is from lung, breast, prostate, pancreas or colon.

24. (Previously Presented) The method of claim 21, wherein the synthetic inhibitor molecule is a synthetic oligonucleotide comprising a C-5 methylcytosine and which recognizes and binds an allosteric site on DNA cytosine methyltransferase (DCMTase) thereby modulating DCMTase activity associated with the allosteric site.

25. (Previously Presented) The method of claim 22, wherein the subject is a human.

26. (Previously Presented) The method of claim 22, wherein the subject is an animal.

27. (Previously Presented) The method of claim 26, wherein the animal is porcine, piscine, avian, feline, equine, bovine, ovine, caprine or canine.

28. (Withdrawn) A method of identifying a molecule which recognizes and binds an allosteric site on DCMTase comprising:

(a) contacting a molecule with DCMTase in the presence of DNA and AdoMet;

(b) measuring DCMTase activity, an increase or decrease in DCMTase activity being indicative of a modulator of DCMTase; and

(c) determining whether the modulation of DCMTase activity is via binding an allosteric site on DCMTase.

29. (Withdrawn) The method of claim 28, wherein the modulator is an inhibitor.

30. (Withdrawn) The method of claim 28, wherein DCMTase activity is measured using a steady-state assay.

31. (Cancelled)

32. (Previously Presented) The method of claim 22, wherein the synthetic inhibitor molecule is a synthetic oligonucleotide.

33. (Previously Presented) The method of claim 24, wherein the subject is a human.

34. (Previously Presented) The method of claim 24, wherein the subject is an animal.

35. (Previously Presented) The method of claim 34, wherein the animal is porcine, piscine, avian, feline, equine, bovine, ovine, caprine or canine.